

## Evaluation of Drying and Grinding Process on the Extraction of Algal Protein from *Scenedesmusobliquus* using Taguchi Method

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### ABSTRACT

There has in recent years been a heightened interest in microalgal biomass with high protein content due to the growing global demand for protein supplements in animal feeds and for human consumption. One microalgae species of particular interest is *Scenedesmusobliquus*. In protein production from algal biomass, the drying process offers long-term preservation and molecular stability. Thus, the drying temperature and duration of drying are key factors in ensuring the longevity of the extracted algal protein. Due to *S. obliquus*' robust cell wall, grinding is necessary to extract the protein from the dried biomass. Hence, the duration of grinding is another significant factor to consider. A Taguchi orthogonal array method is proposed to statistically evaluate the effects of the drying temperature and the duration of both drying and grinding to the extracted protein yield. Further, a modified Lowry's method was utilized to extract protein from the algal biomass after each treatment. The results showed that all three factors play a significant role in the extraction of protein specially the duration of drying and grinding. In addition, the interactions between the three factors are statistically significant except the interaction between the drying temperature and the grinding time. Furthermore, a lower temperature, a faster drying time, and a longer grinding time is preferred to maximize the extraction yield of the algal protein from *S.obliquus*.

**KEYWORDS:** Drying; Grinding; Algal protein; *Scenedesmusobliquus*; Taguchi orthogonal array